

TELEPHONE STH. MELB. WORKS M 2231, 3 LINES CABLES
"STEELMILL"
MELBOURNE

TELEPHONE
BROOKLYN WORKS
FY7 946, 2 LINES

# MELBOURNE IRON & STEEL MILLS PTY. LTD.

Incorporating
The Lion Rolling Mills Pty. Ltd.
The Victoria Iron Rolling Co. Pty. Ltd.

WORKS: SOUTH MELBOURNE & BROOKLYN, VICTORIA

# GOVERNMENT CONTRACTORS

### WE ROLL

SPRING STEEL

ANY QUALITY

ALLOY STEEL

ANY QUALITY

MILD STEEL

AUSTRALIAN STANDARD AND

OTHER QUALITIES

WROUGHT IRON

MERCHANT AND SPECIAL NUT AND CHAIN QUALITIES, ALSO

YORKSHIRE QUALITY

SPECIAL SECTIONS FOR STEEL WINDOWS
SPECIAL SECTIONS FOR HARVESTER TRADE
BARS FOR REINFORCED CONCRETE

ROLLS CUT FOR ANY SECTION IF ORDERED
IN SUFFICIENT QUANTITY

1936

# SPECIAL NOTICE

We carry a stock of finished Steel and Iron of about 1,000 tons, and can usually supply ordinary orders from this source. If immediate delivery is required of material to a particular length not in stock we can roll at a day or two's notice.

OUR PRICE FOR BARS CUT TO LENGTH IS, GENERALLY SPEAKING, THE SAME AS THE PRICE FOR STOCK LENGTHS. THE ADVANTAGE TO THE CUSTOMER IS OBVIOUS.

# MOST OF THE SECTIONS WE ROLL CAN BE MADE IN ANY QUALITY OF STEEL OR IRON

A margin of two-and-a-half per cent, above or below must be allowed in the weight and dimensions of all Rolled Sections

Telephone: M 2231, 3 lines

Telegrams and Cables: "Steelmill," Melbourne

# SPECIAL STEELS

SPRING STEEL OF ANY QUALITY OR SIZE, OIL OR WATER HARDENING, FOR MOTOR CAR, RAILWAY OR ANY OTHER PURPOSE

STEEL FOR RADIO & ELECTRICAL WORK

**AXLE & TAIL SHAFT STEEL** 

BESCOM ,,

CASE HARDENING ,

EXTRA SOFT MILD ,,

FORGING ,

NICKEL "

PLOW "

VALVE INGOT IRON

Tell us what you want your Steel to do and we will give you what is required

# FORGINGS MADE OF ANY SIZE UP TO SIX TONS OF ANY QUALITY DESIRED

BOLTS AND NUTS

UP TO

ANY SIZE

DOGSPIKES

FISHPLATES

ROLLS CUT FOR SPECIAL SECTIONS

# MODERN TESTING MACHINE AND CHEMICAL LABORATORIES

FORM PART OF OUR EQUIPMENT
AND ANY TESTS OR ANALYSES
DESIRED BY CLIENTS OF THEIR
OWN OR OUR STEEL WILL BE
GLADLY CARRIED OUT

Our Technical Staff is available to give any information Clients desire

# IRONITE

The best wearing surface that can be put on a concrete floor is IRONITE

It is made by us from Rolling Mill Furnace Slag

Any reputable floor layer will guarantee Ironite for years

**EXAMPLES CAN BE INSPECTED** 

Best Proportions:

3½ parts IRONITE

I part Cement

NO SAND REQUIRED

WE HAVE AMPLE SUPPLIES

# LIST OF SECTIONS ROLLED

Angles maximum thickness may be oversize

# **EQUAL ANGLES**

$4 \times 4 \times \frac{1}{2}$	to 5/8	$2 \times 2 \times \frac{3}{16}$ to $\frac{3}{8}$
$3\frac{1}{2} \times 3\frac{1}{2} \times \frac{3}{8}$	to 5/8	$1\% \times 1\% \times \%$ to $\%$
$3 \times 3 \times \frac{1}{4}$	to 5/8	$1\frac{1}{2}  imes 1\frac{1}{2}  imes \frac{3}{16}$ to $\frac{3}{8}$
$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$	to ½	$1\frac{1}{4}  imes 1\frac{1}{4}  imes \frac{3}{16}$ to $\frac{1}{4}$
$2\frac{1}{4} \times 2\frac{1}{4} \times \frac{1}{4}$	to 3/8	$1 \times 1 \times \frac{3}{16}$ to $\frac{1}{4}$

# **SQUARE ROOT ANGLES**

See special sections, page 11

# **UNEQUAL ANGLES**

$5 \times 2\frac{1}{2} \times \frac{3}{8}$ to	1/2	$1\frac{1}{2}\times1$	$\times \frac{1}{4}$
$4 \times 3 \times \%$ to	5/8	$1\frac{1}{2} \times \frac{3}{4}$	$\times \frac{1}{4}$
$3\frac{1}{2} \times 3 \times \frac{3}{8}$ to	5/8	$1\frac{1}{4} \times \frac{3}{4}$	× 3/16
$3 \times 2\frac{1}{2} \times \frac{1}{4}$ to	5/8	$1 \times \frac{5}{8}$	× 1/8
$3 \times 2 \times \frac{1}{4}$ to	1/2		

# **TEES**

$4 \times 3 \times \frac{3}{8}$	$2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{8}$
$3\frac{1}{2} \times 3\frac{1}{2} \times \frac{3}{8} & \frac{1}{2}$	2 ×2 ×½ & 5/16
3 ×3 ×3/8 & 1/2	$1\frac{3}{4} \times 1\frac{3}{4} \times \frac{5}{16}$
$2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$ , $\frac{5}{16}$ & $\frac{3}{8}$	$1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$

# SPECIAL SECTIONS SHOWN ON PAGES 11 TO 37

Rolls cut for any section if ordered in sufficient quantity

# LIST OF SECTIONS ROLLED

# **SQUARE ROOT TEES**

See special sections, page 12

# **FLATS**

Any size from  $\frac{1}{2} \times \frac{1}{8}$  to  $6 \times 2\frac{1}{2}$  Round or Square Edge , , , ,  $6 \times \frac{1}{8}$  to  $7 \times 1$  , , , ,  $8 \times \frac{1}{4}$  &  $9 \times \frac{1}{4}$  and thicker

# **NUT IRON**

Any size from  $5/8 \times 5/16$  to  $2 \times 11/2$ Larger sizes by special arrangement

# ROUNDS

All sizes from 3/8 to 33/4

# **SQUARES**

All sizes from  $\frac{5}{16}$  to  $\frac{31}{4}$  and  $\frac{37}{8}$ , 4 and  $\frac{41}{4}$  with bevel corners

# BEVEL, FIRE or SCREEN BARS

See special sections, pages 13, 23, 28

# SPECIAL SECTIONS SHOWN ON PAGES 11 TO 37

Rolls cut for any section if ordered in sufficient quantity

# LIST OF SECTIONS ROLLED

# **ROUND EDGE FOR TYRES**

See special sections, page 13

# **CONVEX SQUARE EDGE**

See special sections, page 14

# CONVEX FEATHER EDGE

See special sections, pages 14, 22, 26

### **CHANNELS**

See special sections, pages 15, 16, 20

# VEHICLE TYRE CHANNELS

See special sections, page 22

# **BLOOMS AND BILLETS**

2 to 4 inches square up to 20 feet long 5 and 6 inches square,  $6\times4,\,8\times4$  and  $9\times4$  up to 13 feet long

### SPECIAL SECTIONS SHOWN ON PAGES 11 TO 37

Rolls cut for any section if ordered in sufficient quantity

# INDEX TO SPECIAL SECTIONS

# MANY SECTIONS NUMBERED THUS 6 FOR ORDERING.

\* Indicates sections usually stocked.

Angles, 11, 31. " Square Root, 11. Anticlimber, 20. Beater Bars, 29. Bevel Edge Flats, Bevels, 13, 23, 28. Bucket Handle Section, Buggy Tyre Channels, 22. Bulb Flat, 28. Bumper Bars, 26. Channels, 15, 16, 20. ,, Tyre, 22. Check Rail, 29. Clip Sections, 22, 30, 31. Comb Bar, 36. Convex Sections, 14, 22, 26. Cope Bar, 23. Coping Angle, 31. Cramp Sections, 29. Cream Can Sections, 27. Diamond Sections, 27. Double Bevel, 23. Double Headed Rail, 36. Faucet Section, 20. Fence Section, Fire Bars, 13. Fishplates, 34, 35. Flats, Round Edge, Glazing Bar, 19. Grader Blades, 36. Gripper, 28. H. Sections, 25, 33. Half Rounds, 14, 22. Harrow Tyne Sections, 27. Heel Section, 28. Hinge Section, 36.

Interlocking Channels, 15, 16. Joist Sections, 25, 33. Lock Sections, 28. Milk Can Sections, 27. Mower Blade, 29. Mullion Bar, Ovals, 27. Oval Spring Section, 31, 32. Plow Beams, 33. Plow Share, 36. Rail, Check, 29. Rail Clip Sections, 30, 31. Rail, Double Head, 36. Railway Interlocking Channel, 15. Railway Retaining Rings, Round Edge Flats, 13. Screen Bars, 13. Spiral Spring Sections, 31, 32. Shoe Heel Section, 28. Skylight Section, 19. Spring Clip Sections, 22. Star Section, 25. Taper Bars, 13. Tees, 12. " Square Root, 12. Tramway Anticlimber, 20. Tramway Grip Die, Tyne Sections, 27. Tyre Channels, 22. 14. Tyre for Toys, Vehicle Tyre Channels, 22. Window Sections, 17, 18, 19, 23.

# SPECIAL ANGLES

Approximate weight per foot below each section

\* Indicates sections usually stocked

# **SQUARE ROOT ANGLES**

\*1  $\times$  1  $\times$   $\frac{1}{8}$   $\times$  .8 lb. 22 \*\*3/4  $\times$  3/4  $\times$  1/8  $\times$  .58 lb. 21 \*\*7/8  $\times$  7/8  $\times$  1/8  $\times$  .74 lb. 20 \*\*5/8  $\times$  5/8  $\times$  1/8  $\times$  .48 lb. 20

\* $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{8} \times .37 \text{ lb. } (19)$ 



A.C. ANGLE

2.7 lbs.

Full Size

OBTUSE ANGLE 5.2 lbs.

Full Size

### TEES

# **SQUARE ROOT TEES**

Table dimension given first



\* $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{3}{16} \times 1.7$ lbs. (3) \* $1 \times 1 \times \frac{1}{8} \times .85$ lb. (11)

 $*1\frac{1}{4} \times 1\frac{1}{2} \times \frac{3}{16} \times 1.5$  , (31)  $*7\frac{1}{8} \times 1\frac{3}{8} \times \frac{1}{8} \times 1$  , (77)

 $*1\frac{1}{4} \times 1\frac{1}{4} \times \frac{3}{16} \times 1.4$  . (2)  $*7\frac{1}{8} \times 1\frac{1}{8} \times \frac{11}{64} \times 1$  . (1)

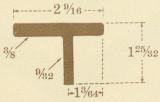
# $*7/8 \times 1 \times 1/8 \times .8$ lb. (18)

# STANDARD TEES

 $4 \times 3 \times \frac{3}{8}$  $3\frac{1}{2} \times 3\frac{1}{2} \times \frac{3}{8} & \frac{1}{2}$ 3 ×3 × 3/8 & 1/2

 $2\frac{1}{4} \times 2\frac{1}{4} \times \frac{3}{8}$  $2 \times 2 \times \frac{1}{4} & \frac{5}{16}$  $1\% \times 1\% \times 5\%$  $2\frac{1}{2} \times 2\frac{1}{2} \times \frac{1}{4}$ ,  $\frac{5}{16}$  &  $\frac{3}{8}$   $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$ 

# SPECIAL TEE



\* Indicates sections usually stocked

# SPECIAL SECTIONS ROUND EDGE FOR TYRES

Widths given are on flat

Also Round Edge 5 overall × 11/8 thick

# **BEVELS OR FIRE BARS**

 $2^{17/32} \times \frac{1}{2}$  to  $\frac{1}{4}$  $45/8 \times 3/4$  to 3/8 $2^{9/32} \times ^{3/8}$  to  $^{1/8}$  $4\frac{1}{2} \times \frac{3}{4}$  to  $\frac{3}{8}$  $2\frac{1}{4} \times \frac{1}{2}$  to  $\frac{1}{4}$  $4 \times 1$  to  $\frac{3}{8}$ We also roll these sizes  $2 \times \frac{25}{32}$  to  $\frac{1}{2}$ \*4 × 5/8 to 1/4 thicker with \*2  $\times$   $\frac{3}{8}$  to  $\frac{1}{8}$ 35/8 × 5/8 to 5/16 same bevel  $1\frac{1}{2} \times \frac{3}{8}$  to  $\frac{1}{4}$  $*3 \times \frac{3}{4} \text{ to } \frac{3}{8}$  $\frac{3}{4}$  ×  $\frac{3}{16}$  to  $\frac{1}{16}$ 25/8 × 5/8 to 3/8

 $4\frac{1}{4} \times \frac{3}{4}$  to  $\frac{5}{16}$  parallel for  $1\frac{3}{4}$ 

# **ROUND EDGE BEVEL**



# **CONVEX SQUARE & FEATHER EDGE**





41/2	×	1/2		11/4 >	( )	/2
21/4	×	3/8		*11/4 >	( 1	3/8
13/4	X	5/16	$\frac{7}{8}$ $\times$ $\frac{7}{32}$	*11/4 >	( 1	/4
15/8	×	9/16	for toy tyres	11/8 ×	( )	3/8
$1\frac{1}{2}$	×	1/2		11/8 >	< 1	/4
*11/2	×	3/8		1 >	< 1	3/8
11/2	×	5/16		1 >	< 1	/4
				7/8 >	< 1	/4

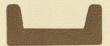
\* Indicates sections usually stocked

# CHANNELS, Full Size

Approximate weight per foot below each section

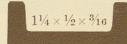
 $1 \times \frac{7}{16} \times \frac{3}{16}$ 

\*11/8 × 1/9 × 7/30

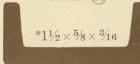


.9 lb. (32)

1.06 lbs. (33)



1.2 lbs. (34)



1.5 lbs. (35)

# RAILWAY INTERLOCKING CHANNEL AND



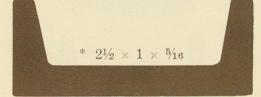
3.4 lbs. (36)



# SPECIAL CHANNELS, Full Size



3 lbs. 37



4.14 lbs. 38

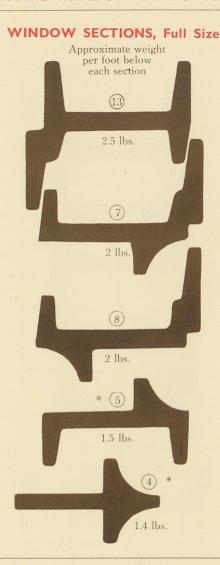
\* 3 × 3/4 × 3/16

2.7 lbs. (39)

 $3\frac{3}{4} \times 1 \times \frac{5}{8}$ 

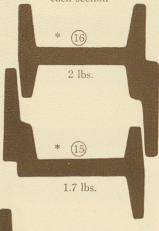
9.6 lbs.

\* Indicates sections usually stocked



# WINDOW SECTIONS, Full Size

Approximate weight per foot below each section





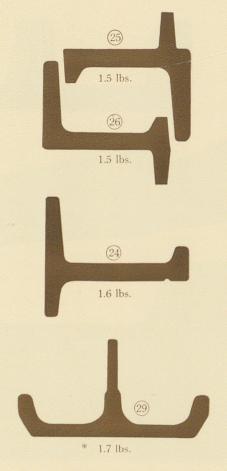


.5 lb.

\* Indicates sections usually stocked

# WINDOW SECTIONS, Full Size

Approximate weight per foot below each section



# SPECIAL SECT

Approximate weight per

\* ANTI CLIME

7½ in. FA

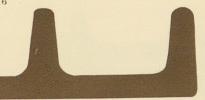
CHANNEL

# EEL MILLS PTY. LTD.

# ONS, Full Size

oot below each section

ER  $6 \times \frac{15}{16}$ 



8 lbs.

# UCET

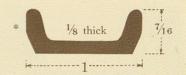
17 lbs.

 $7\frac{3}{4} \times 2$ 

40.8 lbs.

# SPECIAL SECTIONS

# VEHICLE TYRE CHANNELS



and other sizes as below

$$*13/4 \times 3/4 \times 1/4$$
  $*13/8 \times 5/8 \times 3/16$ 

$$*1\frac{5}{8} \times \frac{21}{32} \times \frac{3}{16}$$
  $*1\frac{1}{4} \times \frac{1}{2} \times \frac{1}{8}$ 

$$*1\frac{1}{2} \times \frac{5}{8} \times \frac{3}{16}$$
  $*1\frac{1}{8} \times \frac{1}{2} \times \frac{1}{8}$ 

# MOTOR SPRING CLIP SECTIONS

\*1 × 1/4 \*1 × 3/16



\*7/8 × 1/4 \*3/4 × 3/16



# HALF ROUNDS





.91 lbs. (61)

 $3\frac{1}{2} \times 1\frac{3}{4}$  $3 \times 1\frac{1}{2}$ 

13/8 × 11/16

11/4 × 5/8

11/8 × 9/16

\*1 × 1/9

7/8 × 7/16 \*3/4 × 3/8

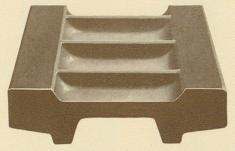
5/8 × 5/16

1/2 × 1/4

# SPECIAL SECTIONS, Full Size

Approximate weight per foot below each section

# **MULLION BAR**



2.9 lbs.

# DOUBLE BEVEL

1.2 lbs.

# COPE BAR



9.5 lbs.

# RAILWAY TYRE RETAINING RINGS Full Size

Approximate weight per foot below each section



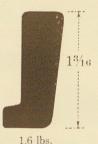
Queensland Rlys. 1.8 lbs.



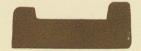
N.S.W. Rlys. 1.7 lbs.



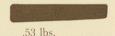
(6748)



(7761



1.4 lbs. (40.6)

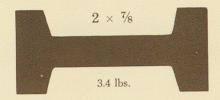


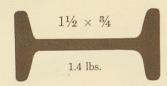
(40.5)

# SPECIAL SECTIONS, Full Size

Approximate weight per foot below each section

# JOIST SECTIONS







# TRAMWAY GRIP DIE

# STAR FENCE SECTION



1.5 lbs.



4.82 lbs.

# BUMPER BARS, Full Size

Approximate weight per foot below each section

# "D" SECTION

\* 2.7 lbs. (41)

# 4in. DOUBLE RECESS

\* 2 lbs. (42)

# **CONCAVE CONVEX**

\* 2.2 lbs. (43)

# 1%in. DOUBLE RECESS

\* 1.37 lbs. (44)

# CONVEX

\*3 × 5/16 (45)

\*2½ × ½ 6

\*21/4 × 5/16 (47)

\*0 5/ (10

\*13/4 × 5/16 (49)

\*2 × 5/16 (48) \*13/4 × 1/4 (50)

 $*1\frac{1}{2} \times \frac{1}{4}$  (51)

Flat Bumper Bars, any size, round or square edge

# SPECIAL SECTIONS

# OVAL AND HARROW TYNE SECTIONS

- \*  $1\frac{3}{4} \times 1\frac{5}{16}$
- \* 1½ × 1½6
- \* 13/8 × 11/16
  - $1\frac{1}{4} \times \frac{5}{8}$
- \* 13/16 × 15/16
- \* 21/32 × 7/16
- \* 11/16 × 3/4
  - $1 \times \frac{1}{2}$
- \* 29/32 × 11/16 7/8 × 7/16
- \* 25/32 × 9/16

# DIAMONDS



17/16 × 11/16 19/32 × 29/32

\* 7/8 × 5/8

\* 11/8 × 25/32

\* 1 × 11/16

# MILK CAN SECTIONS **Full Size**





- .97 lb. per foot (53)
- \* Indicates sections usually stocked

# SPECIAL SECTIONS, Full Size

Approximate weight per foot below each section

# SHOE HEEL SECTION



# **BUCKET HANDLE SECTIONS**



.28 lb. (54)



.33 lb. (55)



# **BEVEL SECTION**



.6 lb.



1.4 lbs.

# LOCK SECTIONS



2.1 lbs.



2 lbs.

# **BULB FLAT**

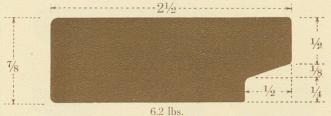
4 lbs.

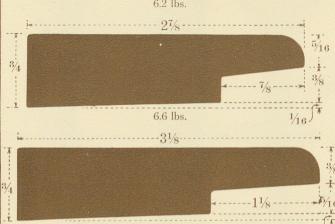
\* Indicates sections usually stocked

# MELBOURNE IRON & STEEL MILLS PTY, LTD. SPECIAL SECTIONS, Full Size Approximate weight per foot below each section CHECK RAIL \* CRAMP (57) \* CRAMP (58) 8.75 lbs. 1.63 lbs. \* MOWER BLADE 3.2 lbs. .5 lb. **BEVEL EDGE FLATS** 1.05 lbs. .75lb. BEATER **BARS** 1.5 lbs. 1.25 lbs.

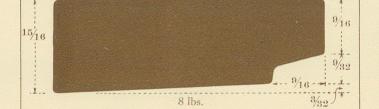
# RAIL CLIP SECTIONS, Full Size

Approximate weight per foot below each section



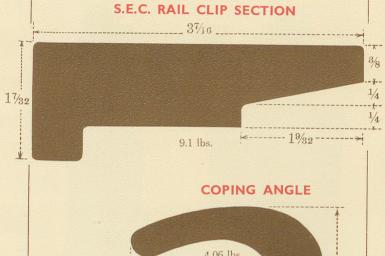


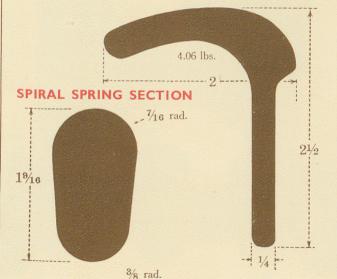
6 lbs.  $2^{13/16}$ 



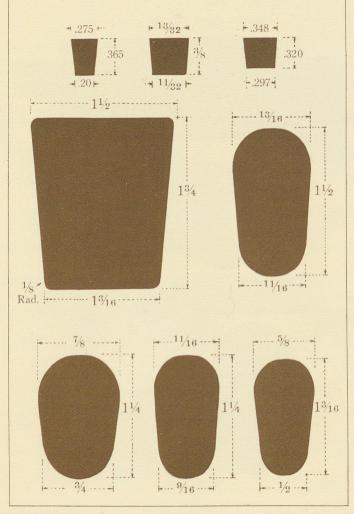
# SPECIAL SECTIONS, Full Size

Approximate weight per foot below each section



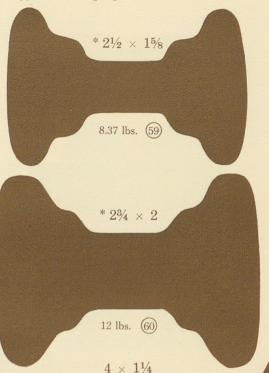


# SPIRAL SPRING SECTIONS, Full Size



# PLOW BEAM SECTIONS, Full Size

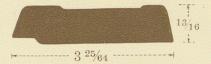
Approximate weight per foot below each section



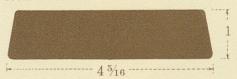
10.4 lbs.

# FISHPLATE SECTIONS, Half Full Size

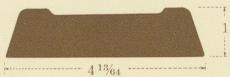
# 80lb. S.E.C. RAIL FISHPLATE



# 831b. N.S.W. RAIL FISHPLATE



# 1001b. RAIL FISHPLATE



# 1001b. N.S.W. RAIL FISHPLATE

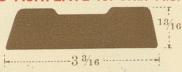


# FISHPLATE SECTIONS, Half Full Size

# MT. LYELL CO. FISHPLATE



# CROSSING FISHPLATE for 60lb. A.S. RAIL



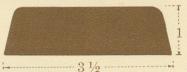
#### 801b. RAIL FISHPLATE

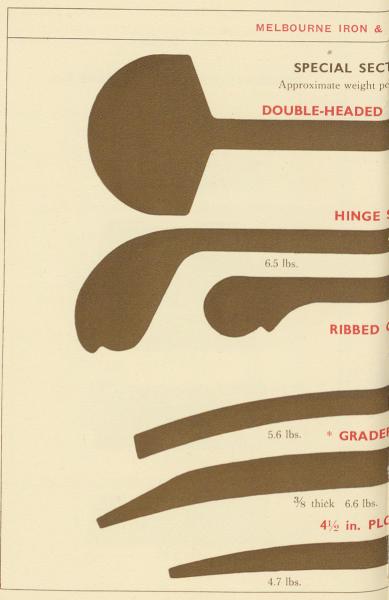


# POINT FISHPLATE for 60lb. A.S. RAIL



### 80lb. N.S.W. T. RAIL FISHPLATE





# TEEL MILLS PTY. LTD. ONS, Full Size foot below each section AIL $6\frac{5}{16} \times 1\frac{5}{8}$ 15.3 lbs. ECTIONS 5.1 lbs. OMB BAR R BLADES 1/2 thick 9.1 lbs. W SHARE

TELEPHONES:
STH. MELBOURNE M 2231 BROOKLYN, FY7 946
TELEGRAMS AND CABLES: "STEELMILL," MELBOURNE

### NOTICE

In the following tables and in all weights of sections given in this book, the weight of the section in STEEL is given, but the weight in IRON can be obtained by making a deduction of two per cent.

GOVERNMENT

#### GALVANIZED SHEETS- CORRUGATED

Approximate number of sheets to a case (ordinary Corrugations) weighing about 10 cwt.

		Gauges								
Leng	th	18	20	22	24	26	28			
5 feet		42	53	66	83	118	132			
6 feet		35	44	55	69	98	111			
7 feet		30	38	47	59	84	95			
8 feet		26	33	41	51	73	83			
9 feet		23	29	36	4.5	65	74			
10 feet		21	26	33	41	58	66			
11 feet		19	24	30	38	54	62			
12 feet		17	22	28	35	49	56			

NOTE.—2 cwt. bundles contain approximately one-fifth of the above number of sheets.

Approximate weight per sheet in lbs. (based on above table to nearest \(\frac{1}{4}\)-lb.).

Gauge	5 ft.	6 ft.	7 ft.	8 tt.	9 ft.	10 ft.	11 ft.	12 ft.
18	$26\frac{1}{2}$	32	371	43	49	53	581	64 lbs.
20	21	251	291	34	381	43	$46\frac{1}{2}$	51 lbs.
22	17	201	24	271	31	34	371	401 lbs.
24	131	161	19	22	25	271	293	$32\frac{7}{2}$ lbs.
26	91	$11\frac{7}{3}$	131	151	171	191	$20\frac{3}{4}$	23 lbs.
28	81	10	$11\frac{3}{4}$	$13\frac{5}{2}$	151	17	181	20 lbs.

# COVERING CAPACITY OF GALVANIZED CORRUGATED SHEETS.

One Ton of Galvanised Corrugated Sheets has the following approximate covering capacity:—

	26 g. 3 in. Cor.	
Single Lap Lap and half Double Lap	 2,000 sq. ft.	

NOTE.—To ascertain the number of squares (10 ft.  $\times$  10 ft.)' divide by 100.

To ascertain cost per square, divide price per ton by number of squares.

# WEIGHT OF ANGLE AND TEE STEEL

In Lbs. per Lineal Foot

	හ <del> 4</del>														18	19	21	22		24	26	28
	111												14.76	15.92	17.09	18.27	19.44	20.61	21.77	22.94	24.10	26.45
	r0 00										11.43	12.49	13.55	14.61	15.67	16.74	17.80	18.87	19.92	20.98	22.04	24.18
nch	91									9.44	10.41	11.36	12.31	13.27	14.22	15.19	16.14	17.10	18.05	10.61	19.95	21.89
s of an In	<b>⊢</b>  01								7.65	8.50	9.36	10.20	11.05	11.90	12.75	13.61	14.46	15.31	16.15	17.00	17.84	19.56
Thickness in Fractions of an Inch	10							6.05	81.9	7.53	8.28	9.05	9.76	10.50	11.25	12.01	12.74	13.49	14.23	14.97	15.70	17.21
kness in	co 00						4.62	5.26	5.89	6.53	7.18	7.81	8.45	80.6	9.72	10.37	11.00	11.64	12.27	:		:
Thic	5 16				2.85	3.39	3.92	4.45	4.98	5.51	6.05	6.58	7.11	7.64	8.17	:	:	:	:	:	:	
	<del>  -</del>			1.91	2.33	2.77	3.19	3.61	4.04	4.46	4.90	:	:		:	:	:	:	:	:	:	:
	3			1.47	1.79	9.11	2.43	2.75	:	:	:	:	:		:		:	:	:	:	;	:
	-100	8.	.87	:	:	:	:	:	:	:	:	:			:	:	:			:	:	:
Flanges	added	61	2.1	101	· 00	33	4,	43	5.	53	. 9	63	1_	73	, 00	83	. 6	93	10,	103	11.	12

# ROUND AND SQUARE STEEL BARS

Area of	7.07 8.30 9.62	11.05 $12.57$ $14.19$	15.90 17.72 19.64	1.65 3.76 5.97	28.27
				12,82	
Weight per lineal foot	30 · 60 35 · 91 41 · 65	47 · 81 54 · 40 61 · 41	68.85 76.71 85.00	93.71 102.85 112.41	122.40
Weight per lineal foot	24.03 28.21 32.71	37.55 42.73 48.23	54.07 60.25 66.76	73.60 80.78 88.29	96.13
Dia. or side in inches	60 60 14-16	60 4 4 64 14	44 70	70 70 70 -[4-1616]4	9
Area of	1.227 1.485 1.767	2.074 2.405 2.761	3.142 3.55 3.98	4.43 4.91 5.41	5.94 6.49
Weight per lineal foot	5.312 6.428 7.650	8.987 10.412 11.953	13.600 15.35 17.21	19·18 21·25 23·43	25.71 28.10
Weight per lineal foot	4.172 5.049 6.008	7.051 8.178 9.388	10.681 12.06 13.52	15.06 16.69 18.40	20·19 22·07
Dia. or side in inches	<u> </u>	roloceolet r-loc	टा टा टा न्यान	टा टा टा १८०० चा	61 61 8 41- 8
Area of	.049 .077 .110	.150 .196 .249	·307 ·371 ·442	.518 .601 .690	.994
Weight per lineal toot	.213 .332 .478	.651 .849 1.076	1.328 1.607 1.912	2.245 2.603 2.988	3.400
Weight per lineal toot	.167	.511	$\begin{array}{c} 1.043 \\ 1.262 \\ 1.502 \end{array}$	1.763 2.044 2.347	2.670
Dia. or side in inches	H4 ra B raise	F 1 1 2 6 9 1	'°™ H 2  4	য়াক <sup>েত</sup> ঘাক	— <u>—</u> — — — — — — — — — — — — — — — — —

# WEIGHT OF FLAT ROLLED STEEL IN LBS. PER LINEAL FOOT

$\begin{array}{c} \frac{3}{16} \\ \hline \cdot 399 \\ \cdot 478 \\ \cdot 558 \\ \cdot 638 \\ \cdot 718 \\ \cdot 797 \\ \cdot 877 \\ \cdot 956 \\ 1 \cdot 037 \\ 1 \cdot 12 \\ 1 \cdot 20 \\ 1 \cdot 28 \\ \end{array}$	$\begin{array}{c} \cdot 638 \\ \cdot 744 \\ \cdot 850 \\ \cdot 956 \\ 1 \cdot 06 \\ 1 \cdot 17 \\ 1 \cdot 28 \end{array}$	$\begin{array}{c} \cdot 930 \\ 1 \cdot 06 \end{array}$	$   \begin{array}{c}     \cdot 957 \\     1 \cdot 117 \\     1 \cdot 28 \\     1 \cdot 44 \\     1 \cdot 59 \\     1 \cdot 76 \\     1 \cdot 91 \\     2 \cdot 07 \\     2 \cdot 23   \end{array} $	$\begin{array}{c} 7\\ \hline 16\\ \hline \\ \cdot 931\\ 1\cdot 117\\ 1\cdot 303\\ 1\cdot 49\\ 1\cdot 68\\ 1\cdot 86\\ 2\cdot 05\\ 2\cdot 23\\ 2\cdot 42\\ 2\cdot 60\\ \end{array}$	$   \begin{array}{c}     1 \cdot 70 \\     1 \cdot 91 \\     2 \cdot 13 \\     2 \cdot 34 \\     2 \cdot 55 \\     2 \cdot 76   \end{array} $
$   \begin{array}{r}     \cdot 478 \\     \cdot 558 \\     \cdot 638 \\     \cdot 718 \\     \cdot 797 \\     \cdot 877 \\     \cdot 956 \\     1 \cdot 037 \\     1 \cdot 12 \\     1 \cdot 20   \end{array} $	$\begin{array}{c} \cdot 638 \\ \cdot 744 \\ \cdot 850 \\ \cdot 956 \\ 1 \cdot 06 \\ 1 \cdot 17 \\ 1 \cdot 28 \\ 1 \cdot 38 \\ 1 \cdot 49 \\ 1 \cdot 59 \end{array}$	$\begin{array}{c} \cdot 797 \\ \cdot 930 \\ 1 \cdot 06 \\ 1 \cdot 19 \\ 1 \cdot 33 \\ 1 \cdot 46 \\ 1 \cdot 59 \\ 1 \cdot 72 \\ 1 \cdot 86 \end{array}$	$   \begin{array}{c}     \cdot 957 \\     1 \cdot 117 \\     1 \cdot 28 \\     1 \cdot 44 \\     1 \cdot 59 \\     1 \cdot 76 \\     1 \cdot 91 \\     2 \cdot 07 \\     2 \cdot 23   \end{array} $	$   \begin{array}{c}     1 \cdot 117 \\     1 \cdot 303 \\     1 \cdot 49 \\     1 \cdot 68 \\     1 \cdot 86 \\     2 \cdot 05 \\     2 \cdot 23 \\     2 \cdot 42   \end{array} $	$ \begin{vmatrix} 1 \cdot 277 \\ 1 \cdot 489 \\ 1 \cdot 70 \\ 1 \cdot 91 \\ 2 \cdot 13 \\ 2 \cdot 34 \\ 2 \cdot 55 \\ 2 \cdot 76 \end{vmatrix} $
.558 $.638$ $.718$ $.797$ $.877$ $.956$ $1.037$ $1.12$ $1.20$	$\begin{array}{c} \cdot 744 \\ \cdot 850 \\ \cdot 956 \\ 1 \cdot 06 \\ 1 \cdot 17 \\ 1 \cdot 28 \\ 1 \cdot 38 \\ 1 \cdot 49 \\ 1 \cdot 59 \end{array}$	$\begin{array}{c} \cdot 797 \\ \cdot 930 \\ 1 \cdot 06 \\ 1 \cdot 19 \\ 1 \cdot 33 \\ 1 \cdot 46 \\ 1 \cdot 59 \\ 1 \cdot 72 \\ 1 \cdot 86 \end{array}$	$   \begin{array}{c}     \cdot 957 \\     1 \cdot 117 \\     1 \cdot 28 \\     1 \cdot 44 \\     1 \cdot 59 \\     1 \cdot 76 \\     1 \cdot 91 \\     2 \cdot 07 \\     2 \cdot 23   \end{array} $	$ \begin{array}{c} 1 \cdot 303 \\ 1 \cdot 49 \\ 1 \cdot 68 \\ 1 \cdot 86 \\ 2 \cdot 05 \\ 2 \cdot 23 \\ 2 \cdot 42 \end{array} $	$ \begin{array}{c c} 1 \cdot 489 \\ 1 \cdot 70 \\ 1 \cdot 91 \\ 2 \cdot 13 \\ 2 \cdot 34 \\ 2 \cdot 55 \\ 2 \cdot 76 \end{array} $
.638 $.718$ $.797$ $.877$ $.956$ $1.037$ $1.12$ $1.20$	$\begin{array}{c} \cdot 850 \\ \cdot 956 \\ 1 \cdot 06 \\ 1 \cdot 17 \\ 1 \cdot 28 \\ 1 \cdot 38 \\ 1 \cdot 49 \\ 1 \cdot 59 \end{array}$	$   \begin{array}{c}     1 \cdot 06 \\     1 \cdot 19 \\     1 \cdot 33 \\     1 \cdot 46 \\     1 \cdot 59 \\     1 \cdot 72 \\     1 \cdot 86   \end{array} $	$1 \cdot 28$ $1 \cdot 44$ $1 \cdot 59$ $1 \cdot 76$ $1 \cdot 91$ $2 \cdot 07$ $2 \cdot 23$	$ \begin{array}{c} 1 \cdot 303 \\ 1 \cdot 49 \\ 1 \cdot 68 \\ 1 \cdot 86 \\ 2 \cdot 05 \\ 2 \cdot 23 \\ 2 \cdot 42 \end{array} $	$ \begin{array}{c c} 1 \cdot 489 \\ 1 \cdot 70 \\ 1 \cdot 91 \\ 2 \cdot 13 \\ 2 \cdot 34 \\ 2 \cdot 55 \\ 2 \cdot 76 \end{array} $
.718 $.797$ $.877$ $.956$ $1.037$ $1.12$ $1.20$	$\begin{array}{c} \cdot 956 \\ 1 \cdot 06 \\ 1 \cdot 17 \\ 1 \cdot 28 \\ 1 \cdot 38 \\ 1 \cdot 49 \\ 1 \cdot 59 \end{array}$	$1 \cdot 19$ $1 \cdot 33$ $1 \cdot 46$ $1 \cdot 59$ $1 \cdot 72$ $1 \cdot 86$	1.44 $1.59$ $1.76$ $1.91$ $2.07$ $2.23$	1.68 $1.86$ $2.05$ $2.23$ $2.42$	$   \begin{array}{c}     1 \cdot 91 \\     2 \cdot 13 \\     2 \cdot 34 \\     2 \cdot 55 \\     2 \cdot 76   \end{array} $
.797 $.877$ $.956$ $1.037$ $1.12$ $1.20$	$   \begin{array}{c}     1 \cdot 06 \\     1 \cdot 17 \\     1 \cdot 28 \\     1 \cdot 38 \\     1 \cdot 49 \\     1 \cdot 59   \end{array} $	$1 \cdot 33$ $1 \cdot 46$ $1 \cdot 59$ $1 \cdot 72$ $1 \cdot 86$	1.59 $1.76$ $1.91$ $2.07$ $2.23$	1.86 $2.05$ $2.23$ $2.42$	$2 \cdot 13$ $2 \cdot 34$ $2 \cdot 55$ $2 \cdot 76$
.877 $.956$ $1.037$ $1.12$ $1.20$	$1 \cdot 17$ $1 \cdot 28$ $1 \cdot 38$ $1 \cdot 49$ $1 \cdot 59$	1.46 $1.59$ $1.72$ $1.86$	1.76 $1.91$ $2.07$ $2.23$	$2 \cdot 05$ $2 \cdot 23$ $2 \cdot 42$	$2 \cdot 34$ $2 \cdot 55$ $2 \cdot 76$
.956 $1.037$ $1.12$ $1.20$	1.28 $1.38$ $1.49$ $1.59$	1.59 1.72 1.86	1.91 $2.07$ $2.23$	$\begin{array}{c} 2 \cdot 23 \\ 2 \cdot 42 \end{array}$	$2 \cdot 55$ $2 \cdot 76$
1.037 $1.12$ $1.20$	1.38 $1.49$ $1.59$	$\begin{array}{c} 1 \cdot 72 \\ 1 \cdot 86 \end{array}$	$\begin{array}{c} 2 \cdot 07 \\ 2 \cdot 23 \end{array}$	$2 \cdot 42$	$2 \cdot 76$
$\begin{array}{c} 1 \cdot 12 \\ 1 \cdot 20 \end{array}$	$\begin{array}{c} 1 \cdot 49 \\ 1 \cdot 59 \end{array}$	1.86	$2 \cdot 23$		
1.20	1.59			2.60	
		1.99	0 00		$2 \cdot 98$
1.90	1.70		$2 \cdot 39$	$2 \cdot 79$	$3 \cdot 19$
1 40	1 10	2.13	$2 \cdot 55$	2.98	$3 \cdot 40$
$1 \cdot 36$	1.81	$2 \cdot 26$	$2 \cdot 71$	$3 \cdot 17$	$3 \cdot 61$
1.43	1.91	$2 \cdot 39$	2.87	$3 \cdot 35$	$3 \cdot 83$
$1 \cdot 52$	2.02	$2 \cdot 52$	3.03	$3 \cdot 54$	$4 \cdot 04$
$1 \cdot 59$	$2 \cdot 13$	$2 \cdot 66$	$3 \cdot 19$	$3 \cdot 72$	$4 \cdot 25$
$1 \cdot 67$	$2 \cdot 23$	$2 \cdot 78$	3.36	3.91	$4 \cdot 46$
$1 \cdot 75$	$2 \cdot 34$	$2 \cdot 92$	$3 \cdot 51$	4.09	4.68
1 · 83	$2 \cdot 44$	3.05	$3 \cdot 67$	$4 \cdot 28$	4.89
1.91	$2 \cdot 55$	3 · 19	$3 \cdot 83$	$4 \cdot 46$	$5 \cdot 10$
1.99	$2 \cdot 66$	$3 \cdot 32$	$3 \cdot 99$	$4 \cdot 65$	$5 \cdot 31$
$2 \cdot 07$	$2 \cdot 76$	3.45	4.14	$4 \cdot 83$	$5 \cdot 53$
$2 \cdot 23$	2.98	$3 \cdot 72$	$4 \cdot 46$	$5 \cdot 21$	$5 \cdot 95$
	3.08	3.85	$4 \cdot 63$	$5 \cdot 40$	$6 \cdot 16$
	$3 \cdot 40$	$4 \cdot 25$	$5 \cdot 10$	$5 \cdot 95$	$6 \cdot 80$
	3.83	$4 \cdot 78$	$5 \cdot 74$	6.69	$7 \cdot 65$
10	$4 \cdot 25$	5.31	$6 \cdot 38$	$7 \cdot 44$	8 · 50
	$4 \cdot 68$	5.84	7.01	8 · 18	$9 \cdot 35$
	W 7.0	6.38	7.65	8.93	$10 \cdot 20$
	$2 \cdot 31$ $2 \cdot 55$ $2 \cdot 87$ $3 \cdot 19$ $3 \cdot 51$	$\begin{array}{c cccc} 2 \cdot 31 & 3 \cdot 08 \\ 2 \cdot 55 & 3 \cdot 40 \\ 2 \cdot 87 & 3 \cdot 83 \\ 3 \cdot 19 & 4 \cdot 25 \\ 3 \cdot 51 & 4 \cdot 68 \end{array}$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

# WEIGHT OF FLAT ROLLED STEEL IN LBS. PER LINEAL FOOT

		1.0	ickness	in Inc	nes			Width in
$\frac{9}{16}$	<u>5</u> 8	$\frac{11}{16}$	$\frac{3}{4}$	13 16	78	$\frac{15}{16}$	1	Inches
1.197	1.330	1.465	1.596	1.729				5 3 4 7 8
1.436	1.596	1.756	1.916					$\frac{3}{4}$
1.676	1.862	2.048	$2 \cdot 235$		2.609			
$1 \cdot 91$	$2 \cdot 13$	$2 \cdot 34$	$2 \cdot 55$	$2 \cdot 76$	$2 \cdot 98$	3.19	$3 \cdot 40$	1
$2 \cdot 15$	$2 \cdot 40$	$2 \cdot 63$	$2 \cdot 87$	3.11	$3 \cdot 35$	$3 \cdot 59$	3.83	$1\frac{1}{8}$
$2 \cdot 39$	$2 \cdot 66$	$2 \cdot 92$	$3 \cdot 19$	$3 \cdot 45$	$3 \cdot 72$	3.98	$4 \cdot 25$	$1\frac{1}{4}$
$2 \cdot 63$	$2 \cdot 93$	$3 \cdot 22$	$3 \cdot 51$	3.80	$4 \cdot 10$	$4 \cdot 39$	$4 \cdot 68$	$1\frac{3}{8}$
2.87	$3 \cdot 19$	$3 \cdot 51$	3.83	4.14	4.46	4.78	5 · 10	$1\frac{1}{2}$
3.11	3.46	3.80	$4 \cdot 14$	4.49	4.84	$5 \cdot 18$	$5 \cdot 53$	$1\frac{5}{8}$
3.35	$3 \cdot 72$	4.09	$4 \cdot 46$	4.83	$5 \cdot 21$	$5 \cdot 58$	$5 \cdot 95$	$1\frac{3}{4}$
3.59	3.99	$4 \cdot 39$	4.78	5.18	5.58	5.98	$6 \cdot 38$	17/8
3.83	$4 \cdot 25$	4.68	$5 \cdot 10$	5.53	5.95	6.38	6.80	2
4.06	4.52	4.97	$5 \cdot 42$	5.87	6.33	6.78	$7 \cdot 23$	$2\frac{1}{8}$
$4 \cdot 30$	4.78	$5 \cdot 26$	5.74	$6 \cdot 22$	6.69	7.17	$7 \cdot 65$	$2\frac{1}{4}$
4.54	5.05	5.56	6.06	6.56	7.07	7.58	8.08	$2\frac{3}{8}$
4.78	5.31	5.84	6.38	6.91	7.44	7.97	8.50	$2\frac{1}{2}$
5.02	5.58	6.14	6.69	7.25	7.81	8.37	8.93	$2\frac{5}{8}$
$5 \cdot 26$	5.84	$6 \cdot 43$	$7 \cdot 01$	7.60	8.18	8.77	9.35	$2\frac{3}{4}$
5.50	$6 \cdot 12$	$6 \cdot 73$	$7 \cdot 33$	7.94	8.55	9.17	9.78	$2\frac{7}{8}$
5.74	6.38	7.01	7.65	8.29	8.93	9.56	$10 \cdot 20$	3
5.98	6.65	7.31	7.97	8.64	9.31	9.97	$10 \cdot 63$	$3\frac{1}{8}$
$6 \cdot 22$	6.91	7.60	8.29	8.98	9.67	10.36	11.05	31
6.70	7.44	8.18	8.93	9.67	10.41	11.16	11.90	$3\frac{1}{2}$
6.94	7.71	8.48	9.25	10.02	10.79	11.56	$12 \cdot 33$	$3\frac{5}{8}$
7.65	8.50	9.35	10.20	11.05	11.90	12.75	13.60	4
8.61	9.56	$10 \cdot 52$	11.48	12.43	13.39	$14 \cdot 34$	15.30	41
9.56	10.63	11.69	12.75	13.81	14.88	15.94	17.00	5
$10 \cdot 52$	11.69	12.86	14.03	15.19	16.36	$17 \cdot 53$	18.70	$5\frac{1}{2}$
11.48	12.75	14.03	$15 \cdot 30$	16.58	17.85	19.13	20.40	6

#### WIRE AND SHEET GAUGES

		Th	ickness or Dian	neter in Inch	nes
Gauge	Approx. thickness in inches	Birmingham Sheet *	Stubbs (Birmingham Wire)	Imperial Standard (British) Wire	America Standard Brown & Sharp
4/0	1/2	.542	·454	•400	-4600
3/0	-	.500	·425	.372	.4096
2/0		.445	-380	.348	-3648
2/0		•400	·340	.324	.3249
1		.353	∙300	.300	-2893
1 2 3		·315	·284	.276	-2576
3		.280	.259	.252	-2294
4	1	-250	·238	.232	.2043
4 5 6 7 8		-222	•220	·212	·1819
6		.198	-203	·192	·1620
7		.176	·180	·176	.1443
8		.157	·185	·160	·1285
9		·140	·148	.144	·1144
10	1	·125	·134	·128	.1019
11	7/64	·111	·120	·116	-0907
12	18 7/64 3 32	-099	·109	·104	.0808
13		.088	.095	.092	.0720
14	5/64	.078	.083	.080	-0641
15		.070	.072	.072	.0571
16	16	.062	.065	.064	.0508
17		.056	.058	.056	.0453
18	1/20	.050	.049	.048	.0403
19		.044	.042	.040	·0359
20		.039	.035	+036	.0320
21		.035	.032	.032	.0285
22	1 32	.031	.028	.028	·0253
23	11	·028	.025	·024 ·022	·0226 ·0201
21 22 23 24 25 26 27 28	1/40	·025 ·022	·022 ·020	.020	.0179
20		.020	018	.018	.0179
20		.017	.016	.0164	.0142
20	1/64	016	.014	.0148	.0126
29	764	.016	.013	.0136	.0113
30	1/80	012	.012	.0124	.0100
31	/80	.011	.010	.0116	-00893
32		.0098	.009	-0108	.00795
33		-0098	.008	-0100	.00708
34	1/128	-0077	.007	.0092	-00630
35	/128	.0069	.005	.0084	-00561
36		.0061	-004	.0076	-00500

\*This Gauge (B.G.) is the customary commercial Gauge for Iron and Steel Sheets, whether Black, Galvanized or Tinned. It is sometimes erroneously referred to as the Birmingham Wire Gauge (B.W.G.), but the latter is a different gauge.

It is useful to remember that 10 B.G. is  $\frac{1}{8}$  in., 16 B.G. is  $\frac{1}{16}$  in., and that for every addition of 6 to the gauge number, the thickness is halved.

# GALVANISED BARBED WIRE

IOWA PATTERN



Gauge	Approx. length per cwt. yards	Approx. weight per mile lb.	Approx. breaking load in lb.
12	460	429	1140
13	560	352	915
14	670	294	675

# WAUKEGAN PATTERN



Gauge	Approx. length per cwt. yards	Approx. weight per mile lb.	Approx. breaking load in lb.
$12\frac{1}{2}$	620	318	1020
14	880	229	650
14*	930	212	650

<sup>\*</sup>Waukegan long distance.

# GENERAL NOTES AND INFORMATION

1 square foot of steel, 1 inch thick, weighs  $40 \cdot 8$  lbs.

Steel expands  $\frac{1}{10000}$  of its length for every 13 degrees F. increase of temperature, or every ton per square inch of stress.

The melting points of various metals are about as follows:—

		Cer	tigrade
Brass	 		1040
Cast Iron	 		1200
Chromium	 		1620
Copper	 		1080
Gold	 		1060
Lead	 		330
Manganese	 		1230
Mild Steel	 		1350
Molybdenum	 		2550
Nickel	 		1450
Silicon	 		1420
Silver	 		960
Solder	 		160
Tin	 		230
Titanium	 		1800
Tungsten	 		3400
Vanadium	 		1720
Wrought Iron	 		1530
Zinc	 		420

# WHITWORTH STANDARD BOLTS AND NUTS

Dimensions are given to the nearest one sixty-fourth of an inch

Diameter of Bolt	Bol	Bolt Head and Nuts						
Diamet of Bolt	Width across Flats	Width across Corners Height of Bolt Head		Threads per inch	Tapping Hole			
in.  36  14  56  36  76  36  76  29  16  4  36  78  17  11  11  11  11  11  11  11  11	in, in $ \frac{16}{16}  \text{and}  \frac{1}{64}  \frac{1}{64}  \frac{3}{64}  \frac{1}{166}  \frac{3}{64}  \frac{1}{166}  \frac{1}{64}  \frac{1}{64}  \frac{1}{8}  \frac{1}{64}  \frac{1}{8}  \frac{1}{64}  \frac{1}{64}  \frac{1}{64}  \frac{1}{166}  \frac{1}{64}  \frac{1}{164}  \frac{1}{164} $	in. in. $\frac{1}{2}  \text{and}  \frac{1}{1/64}$ $\frac{1}{16}  \dots  \frac{1}{1/32}$ $\frac{1}{1/64}  \dots  \frac{1}{1/64}$ $\frac{1}{1/64}  \dots  \frac{1}{1/32}$ $\frac{1}{1/64}  \dots  \frac{1}{1/32$	in. in. $ \frac{1}{8} \text{ and } \frac{1}{32} \\ \frac{1}{16} & \cdots & \frac{1}{32} \\ \frac{1}{4} & \cdots & \frac{1}{164} \\ \frac{1}{56} & \cdots & \frac{1}{164} \\ \frac{1}{8} & \cdots & \frac{3}{164} \\ \frac{1}{2} & \cdots & \frac{3}{164} \\ \frac{1}{2} & \cdots & \frac{1}{32} \\ \frac{1}{8} & \cdots & \frac{1}{32} \\ \frac{1}{8} & \cdots & \frac{1}{32} \\ \frac{1}{8} & \cdots & \frac{1}{164} \\ \frac{1}{16} & \cdots & \frac{1}{32} \\ \frac{1}{2} & \cdots & $	$\begin{array}{c} 24\\ 20\\ 18\\ 16\\ 14\\ 12\\ 12\\ 11\\ 10\\ 10\\ 9\\ 8\\ 8\\ 7\\ 7\\ 6\\ 6\\ 6\\ 5\\ 5\\ 4\frac{1}{2}\\ 4\frac{1}{2}\\ 4\frac{1}{3}\\ \frac{1}{2}\\ 3\frac{1}{2}\\ \end{array}$	in. in. $\frac{1}{8} \text{ and } \frac{1}{64}$ $\frac{1}{4} \frac{1}{4} \dots \frac{3}{64}$ $\frac{1}{4} \frac{1}{4} \dots \frac{3}{64}$ $\frac{1}{8} \dots \frac{1}{32}$ $\frac{1}{76} \dots \frac{1}{32}$ $\frac{1}{2} \dots \frac{1}{32}$ $\frac{1}{9} \dots \frac{1}{64}$ $\frac{1}{16} \dots \frac{3}{64}$ $\frac{1}{16} \dots \frac{1}{32}$ $\frac{1}{2} \dots \frac{1}{32}$ $\frac{1}{3} \dots \frac{1}{32}$			

# TABLE OF WEIGHTS IN POUNDS OF BLACK BOLTS AND NUTS

(Hexagon Head and Nut and Round Neck)

1 4 4 4	Length of Bolt in Inches from under Head						Dia	amet	ters	in I	nche	es			
,	in In unde	$\frac{1}{4}$	5 16	3/8	$\frac{7}{16}$	$\frac{1}{2}$	9 16	<u>5</u> 8	$\frac{3}{4}$	7/8	1	$1\frac{1}{8}$	$1\frac{1}{4}$	$1\frac{3}{8}$	$1\frac{1}{2}$
1 1 1	8 8 ½ 9 9 ½ 0 0 ½ 1 1 ½ 1 ½	-033 -0356 -0368 -040 -0429 -051 -053 -056 -060 -064 -067 -078 -081 -085 -089 -099 -103 -110 -117 -1124	.059 .061 .065 .070 .073 .081 .085 .087 .090 .095 .101 .112 .1135 .129 .135 .140 .152 .157 .162 .179 .179 .179	.096 .1003 .103 .108 .112 .116 .120 .124 .132 .136 .140 .149 .156 .164 .173 .205 .221 .229 .221 .229 .237 .245 .254 .338 .338 .338 .349 .349 .349 .349 .349 .349 .349 .349	$\begin{array}{c} \cdot 1444 \\ \cdot 1500 \\ \cdot 156 \\ \cdot 1611 \\ \cdot 166 \\ \cdot 1722 \\ \cdot 1777 \\ \cdot 1839 \\ \cdot 1949 \\ \cdot 1949 \\ \cdot 205 \\ \cdot 216 \\ \cdot 2270 \\ \cdot 238 \\ \cdot 2248 \\ \cdot 2260 \\ \cdot 2270 \\ \cdot 238 \\ \cdot 248 \\ \cdot 248 \\ \cdot 2492 \\ \cdot 2492 \\ \cdot 2492 \\ \cdot 2492 \\ \cdot 304 \\ \cdot 315 \\ \cdot 3381 \\ \cdot 348 $	-2218 -2288 -243 -250 -257 -264 -279 -286 -300 -315 -329 -343 -358 -372 -344 -415 -425 -429 -4458 -465 -354 -355 -356 -357 -357 -357 -357 -357 -357 -357 -357	·286 ·296 ·308 ·312 ·322 ·330 ·349 ·358 ·367 ·376 ·404 ·422 ·439 ·567 ·585 ·603 ·621 ·640 ·676 ·712 ·749 ·785 ·822 ·836 ·836 ·836 ·836 ·836 ·836 ·836 ·836	\$\\ 3863 \\ 3801 \\ 38	-622 -644 -647 -699 -725 -773 -775 -775 -775 -780 -838 -871 -100 -1032 -1044 -1129 -1129 -1141 -1129 -1141	8   98   1   98   1   1   1   1   1   1   1   1   1	3 1 · 489 5 1 · 518 7 1 · 546 9 1 · 575 1 · 604 1 · 632 1 · 661 1 · 778 1 · 778 1 · 833 1 · 891 1 · 928 2 · 005	2·177 2·214 2·286 2·323 2·348 2·348 2·468 2·57 2·650 2·722 2·670 2·650 3·013 3·04 3·376 3·376 4·666 3·812 4·38 4·407 3·407 4·407	2.9964 3.041 3.045 3.131 3.220 3.3398 3.398 3.489 3.489 3.489 3.489 4.025 4.114 4.293 4.383 5.278 6.098 5.278 6.098 5.278 6.09	3-904 3-959 4-014 4-067 4-176 4-186 4-393 4-502 4-610 4-718 4-936 4-718 4-936 5-15-261 5-15-261 5-15-261 5-15-369 3-3-238 3-455 3-3-71 3-888 3-455 3-71 3-888 3-455 3-77 7-77 7-77 7-973	5·032 5·097 5·161 5·290 5·678 5·807 5·878 6·065 6·195 6·323 6·452 6·581 6·701 6·898 8·071 8·098 8·071 8·098 8·075 9·033 9·292 9·550 9·808 10·066
															000

To ascertain the weight of any bolt and nut having other forms of head and nut, take the weight as shown above and add or deduct the amounts given in the table on next page.

# TABLE OF WEIGHTS IN POUNDS OF BOLTS AND NUTS

See Footnote on previous page

	<del> -11</del>	5 16	eo eo	<u>16</u>	Hea	9 16	10/00	क्षांच
r square head add	6000	.0019	.0033	.0052	6200.	.0110	.0156	.0274
Square r	-0011	.0022	.0038	.0061	.0091	.0128	.0180	.0308
For our head deduct	.0050	7600.	.0167	.0267	.0399	.0574	.0780	.1359
For square neck add	60000	.0016	.0031	-0047	.0074	.0106	.0146	.0251

			DIA	OIAMETERS	IN I	NCHES		
	r- ∞	П	11/8	14	133	112	$1\frac{3}{4}$	2
For square head add For square nut add For cup head deduct For square neck add	.0427 .0493 .2151 .0397	.0637 .0735 .3196 .0600	.0843 .0974 .4045 .0804	.1255 .1410 .6263 .1208	.1655 .1912 .8330 .1593	.2154 .2487 1.073 .2012	.3214 .4210 1.711 .3296	.5097 .5874 2.562 .4783

# ROCKWELL AND BRINELL HARDNESS TABLES

The tables shown on the opposite page are given for ascertaining the tensile strength of steel by means of the Rockwell or Brinell machines.

These relative values are merely averages of results obtained by different investigators on different classes of steel on different machines, and are only of approximate validity for any one grade of material.

The Brinell impression tests are made with a 10 m.m. diameter (D) ball with a standard load (P) of 3000 k.g. (6614 lbs.). The Brinell Hardness Numeral is calculated according to the formula:

$$H = \frac{P}{\frac{MD}{2} \left( D - \sqrt{D^2 - d^2} \right)}$$

("d" is the diameter of the impression.)

The "C" scale Rockwell determinations are made with a conical diamond "BRALE" penetrator and 150 k.g. major load. The readings are taken on the black figured C scale.

The "B" Scale Rockwell determinations are made with  $\frac{1}{16}$ " diam, steel ball and 100 k.g. major load. The readings are taken on the red figured B scale.

The tables do not apply to specially high alloyed steels such as 25% nickel steel, alloyed hard steel, etc., nor to cast iron chilled castings, or non-ferrous metals. As regards all other steels and iron the tensile strength, determined by either the Rockwell or Brinell impression test and the tables, corresponds very closely (probably within 5%) to the ultimate tensile strength of a tensile test taken at the same point.

# Comparison Rockwell and Brinell Hardness

Tons		nell g. load	Rock- well	Tons	Brit 3000 kg		Rock- well
sq. inch	Diam.	Brinell No.	C Scale	sq. inch	Diam.	Brinell No.	B Scale
172	2.2	782		48	4.05	223	97
163	$2 \cdot 25$	745		46	4.1	217	96
155	$2 \cdot 3$	712		45	$4 \cdot 15$	212	95
150	2.35	682	65	44	$4 \cdot 2$	207	9.4
143	2.4	653	63	43	$4 \cdot 25$	201	93
138	$2 \cdot 45$	627	61	42	$4 \cdot 3$	197	92
130	$2 \cdot 5$	601	59	41	$4 \cdot 35$	192	91
124	$2 \cdot 55$	575	57	40	$4 \cdot 4$	187	90
119	$2 \cdot 6$	555	55	40	$4 \cdot 45$	183	89
114	$2 \cdot 65$	534	54	39	$4 \cdot 5$	179	88
110	$2 \cdot 7$	514	53	39	4.55	174	87
106	2.75	495	51	38	$4 \cdot 6$	170	86
103	2.8	477	49	38	$4 \cdot 65$	167	85
100	$2 \cdot 85$	461	48	37	4.7	163	84
96	2.9	444	47	37	4.75	159	83
93	$2 \cdot 95$	429	45	36	4.8	156	82
90	$3 \cdot 0$	415	44	35	4.85	152	81
87	$3 \cdot 05$	401	43	34	4.9	149	80
84	$3 \cdot 1$	388	42	34	$4 \cdot 95$	146	79
81	$3 \cdot 15$	375	40	33	$5 \cdot 0$	143	78
78	$3 \cdot 2$	363	39	32	$5 \cdot 05$	140	77
75	$3 \cdot 25$	352	38	32	$5 \cdot 1$	137	75
73	3 · 3	341	37	31	$5 \cdot 15$	134	74
71	$3 \cdot 35$	331	36	30	$5 \cdot 2$	131	72
69	$3 \cdot 4$	321	35	30	$5 \cdot 25$	128	71
67	$3 \cdot 45$	311	34	29	$5 \cdot 3$	126	70
65	$3 \cdot 5$	302	33	29	$5 \cdot 35$	123	69
63	$3 \cdot 55$	293	31	28	$5 \cdot 4$	121	68
62	3 · 6	285	30	27	$5 \cdot 45$	118	67
60	$3 \cdot 65$	277	29	27	$5 \cdot 5$	116	65
58	$3 \cdot 7$	269	28	26	$5 \cdot 55$	114	64
56	$3 \cdot 75$	262	26	26	5.6	111	63
55	3.8	255	25	25	$5 \cdot 65$	109	61
53	3.85	248	24	25	$5 \cdot 7$	107	60
52	3.9	241	22	24	$5 \cdot 75$	105	58
51	$3 \cdot 95$	235	21	24	5.8	103	57
49	$4 \cdot 0$	230	20	23	5.85	101	56

# **DECIMAL EQUIVALENTS**

Exact Decimal Equivalents of Fractions

Fract	tions	Deci- mals	]	Fract	ions	Deci- mals
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		          $\begin{array}{c} \cdot 015625 \\ \cdot 03125 \\ \cdot 03125 \\ \cdot 046875 \\ \cdot 0625 \\ \cdot 078125 \\ \cdot 09375 \\ \cdot 109375 \\ \cdot 125 \\ \cdot 140625 \\ \cdot 15625 \\ \cdot 171875 \\ \cdot 203125 \\ \cdot 203125 \\ \cdot 21875 \\ \cdot 2234375 \\ \cdot 25 \\ \cdot 265625 \\ \cdot 28125 \\ \cdot 28125 \\ \cdot 296875 \\ \cdot 3125 \\ \cdot 34375 \\ \cdot 359375 \\ \cdot 375 \\ \cdot 390625 \\ \cdot 40625 \\ \cdot 421875 \\ \cdot 4375 \\ \cdot 4375 \\ \cdot 4484375 \\ \cdot 484375 \\ \cdot 5 \end{array}$	33/64 35/64 37/64 39/64 41/64 43/64 45/64 47/64 49/34 51/64 55/64 55/64 57/64 63/64 	177 332  213 32  233 32  233 32  233 32  233 32 	         	         $\begin{array}{c} \cdot 515625 \\ \cdot 53125 \\ \cdot 546875 \\ \cdot 5625 \\ \cdot 578125 \\ \cdot 59375 \\ \cdot 609375 \\ \cdot 625 \\ \cdot 640625 \\ \cdot 65625 \\ \cdot 671875 \\ \cdot 703125 \\ \cdot 703125 \\ \cdot 71875 \\ \cdot 734375 \\ \cdot 75 \\ \cdot 765625 \\ \cdot 78125 \\ \cdot 784375 \\ \cdot 8125 \\ \cdot 84375 \\ \cdot 84375 \\ \cdot 859375 \\ \cdot 859375 \\ \cdot 890625 \\ \cdot 921875 \\ \cdot 9375 \\ \cdot 9375 \\ \cdot 94375 \\ \cdot 984375 \\ \cdot 984375 \\ 1 \cdot 00 \\ \end{array}$

# WEIGHTS OF VARIOUS MATERIALS

	Per		Per
35-4-13	cubic	25 / 11	cubic
Material	foot	Material	foot
	in lbs.		in lbs.
Aluminium	162	Coke	60
Brass, cast	525	Concrete, Portland	
,, wire	534	Cement	130
Bronze	513	Earth, loamy	80
Copper, cast	550	Earth, loamy Glass, plate	184
,, sheet and wire	555	Gravel, coarse, mixed	770
Gold, pure	$\frac{1210}{1108}$	with sand	110
,, standard Iron, wrought	485	Granite, Aberdeen	167
,, cast	450	grey Ice	571
Lead, cast	710	Ice Ivory	114
Mercury, fluid	848	India-rubber	62
Nickel, cast	788	Limestone, magnesian	145
Platinum, pure	1220	Lime, ordinary quick	
Pewter	453	(of stone)	55
Silver, standard	658	Marble, average	170
Steel	490	Masonry, rubble	140
Tin, cast	456	Pumice stone	57
Zinc	450	Quartz Sand, river	166 118
TO:	$\frac{182}{62}$	Sand, river, pit, clean coarse	100
Brick, common	02	Sandstone, Craigleith	145
London stock	115	Slate, Welsh	181
,, red facing	130	Snow (in England)	3 to 10
,, fire	150	Tar, Coal	63
Brickwork in cement	115	Ash	50
Cement, Portland	86	Cedar, American	41
Cement, Portland, and		Cork	15
sand equal parts	130	Ebony, Indian	70
Cement, Roman, and	110	Iron Bark	64
sand equal parts Chalk, solid	$\frac{112}{125}$	Jarrah	51 80
Charcoal, from pine	125	Ľignum-vitae Oak, English	50
Clay, ordinary	120	Pine, Red American	36
Coal, solid	80	Stringy Bark	54

### LIVE LOADS IN BUILDINGS

Most building regulations treat the live or superimposed load on a floor as equivalent to an assumed dead or stationary load. For floors carrying machinery with heavy moving parts, special calculation is necessary. A comparison of floor loads, as stipulated in the by-laws of capital cities of the Commonwealth, is given below.

# Superimposed Floor Loads in Lbs. per Sq. Ft. (In Terms of Dead Loading)

		Mel-	Ade-	Bris-	
	Sydney	bourne	laide	bane	Perth
	1917	1923	1923	1926	1929
Dwellings	. 50	70	50	70 .	75
Offices	. 60	84	60	84	100
Retail Shops .	. 100	140	100	140	120
Places of Assembly	100	140	100	140	120
Ball Rooms and Drill Halls .			150		150
Book Stores, Libraries and Museums			200		
Workshops and Fac					According
tories		140	100	140	to use
Warehouses .	. 150	168	150	168	220 to 670
Hardware, Machin ery, Paper Stores					
and Printeries .			300		
Flat Roofs	120	70	120	70	
Horizontal Wind Pressure		25	25	25	

\*Where combined direct and bending stress due to wind is considered, a working stress of 25% in excess of that allowed in tension or compression may be used (Sydney).

# **EQUIVALENTS OF DEGREES**

# Centigrade in Fahrenheit

Degrees	Degrees	Degrees	Degrees	Degrees	Degrees	Degrees	Degrees
Centigrade	Fahrenheit	Centigrade	Fahrenheit	Centigrade	Fahrenheit	Centigrade	Fahrenheit
0	32	340	644	680	1256	1020	1868
10	50	350	662	690	1274	1030	1886
20	68	360	680	700	1292	1040	1904
30	86	370	698	710	1310	1050	1922
40	104	380	716	720	1328	1060	1940
50	122	390	734	730	1346	1070	1958
60	140	400	752	740	1364	1080	1976
70	158	410	770	750	1382	1090	1994
80	176	420	788	760	1400	1100	2021
90	194	430	806	770	1418	1110	2030
100	212	440	824	780	1436	1120	2048
110 120 130 140 150 160 170	230 248 266 284 302 320 338	450 460 470 480 490 500	842 860 878 896 914 932 950	790 800 810 820 830 840 850	1454 1472 1490 1508 1526 1544 1562	1130 1140 1150 1160 1170 1180 1190	2066 2088 2102 2120 2138 2156 2174
180 $190$ $200$ $210$ $220$	356 374 392 410 428	510 520 530 540 550 560 570	968 986 1004 1022 1040	850 860 870 880 890 900 910	1502 1580 1598 1616 1634 1652 1670	1200 1210 1220 1230 1240 1250	2192 2210 2228 2246 2264 2282
230 240 250 260 270 280	446 464 482 500 518 536	580 590 600 610 620	1058 1076 1094 1112 1130 1148	920 930 940 950 960	1688 1706 1724 1742 1760	1260 1270 1280 1290 1300	2300 2318 2336 2354 2372
290	554	630	1166	970	1778	1310	2390
300	572	640	1184	980	1796	1320	2408
310	590	650	1202	990	1814	1330	2426
320	608	660	1220	1000	1832	1340	2444
330	626	670	1238	1010	1850	1350	2462

# WEIGHTS AND MEASURES ENGLISH AND METRIC EQUIVALENTS

```
1 pound (1 lb.)
                          =453.6 grammes
100 lbs
                          = 45.36 kilos
112 lbs
                          = 50.80 \text{ kilos}
1 net ton (2000 lbs.)
                          = 907 · 2 kilos
1 gross ton (2240 lbs.)
                          = 1016 kilos.
1 kilo.
                          = 2.2046 \text{ lbs}
100 kilos
                          = 220.46 lbs
1 metric ton (1000 kilos.) = 2204.6 lbs. = 0.9482 gross
                               tons = 1 \cdot 1023 net tons
1 inch
                          = 25.40 millimetres
1 foot (12 inches)
                          = 30.48 centimetres
1 vard (3 feet)
                          = 91.44 centimetres
1 mile (1760 yards)
                          = 1609 · 35 metres
1 millimetre
                          = 0.03937 inch
1 centimetre
                          = 0.3937 inch
1 metre
                          = 39 \cdot 37 inches = 3 \cdot 2808 feet
1 kilometre
                          = 0.62137 \text{ mile} = 1093.6 \text{ vds.}
                         = 6.4516 square centimetres
1 square inch
                        l = 645 \cdot 16 square millimetres
1 square foot
                          = 0.0929 square metre
1 square vard
                          = 0.8361 square metre
1 square millimetre
                          = 0.00155 square inch
1 square centimetre
                          = 0.155 square inch
                         = 10.7639 square feet
1 square metre
                         = 1.196 square vards
1 pound per foot
                          = 1.4882 kilos, per metre
1 pound per yard
                          = 0.4961 kilo. per metre
1 pound per sq. inch
                         = 0.0703 kilo. per sq. centimetre
1 pound per sq. foot
                         = 4.8825 kilos. per sq. metre
1 kilo, per metre
                          = 0.6720 pound per foot
1 kilo. per sq. millimetre = 1422 · 32 pounds per sq. inch
1 kilo. per sq. centimetre = 14.2232 pounds per sq. inch
                         = 0.2048 pound per sq. foot
1 kilo, per sq. metre
                         = 1.8433 pounds per sq. vard
```

# **HEAT COLOURS**

Steel, at the temperatures shown, when seen in a dark place, has approximately the following heat colours:—

			ature:	Temper	
Colour:			° Cent.	° Fahr.	
- White	-	-	1250-1300	2280-2370	
- Yellow	-	-	1150-1250	2100-2280	
Dull Yellow	-	-	1050-1150	1900-2100	
- Orange	-	-	880-1050	1620-1920	
Bright Red	-	-	830-880	1530-1620	
t Cherry Red	Bright	-	800-836	1470-1530	
Cherry Red	- -	-	780-800	1440-1470	
Cherry Red	Dull	-	750-780	1380-1440	
- Dull Red	_	-	750-650	1200-1380	
Brown Red	-	-	580-650	1080-1200	
Dull Brown		-	520-580	970-1080	

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Various Mater-

and Measures.

56.

# SPECIAL SECTIONS

**Full Size** 

**CHANNELS** 







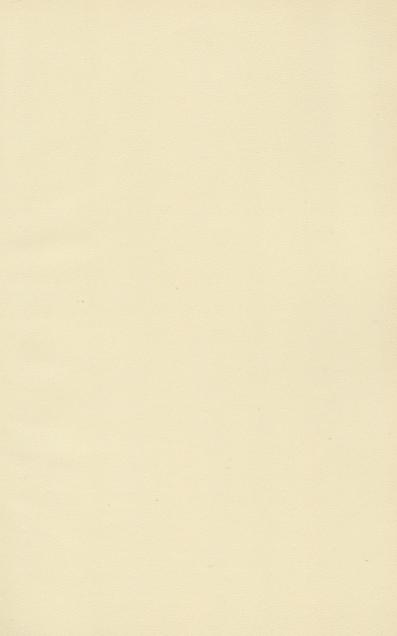


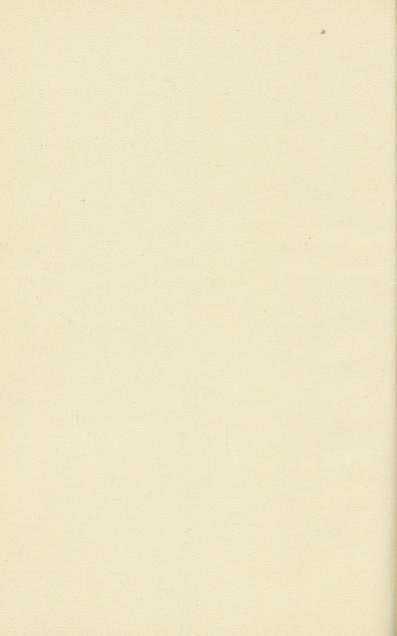
MILK CAN SECTION







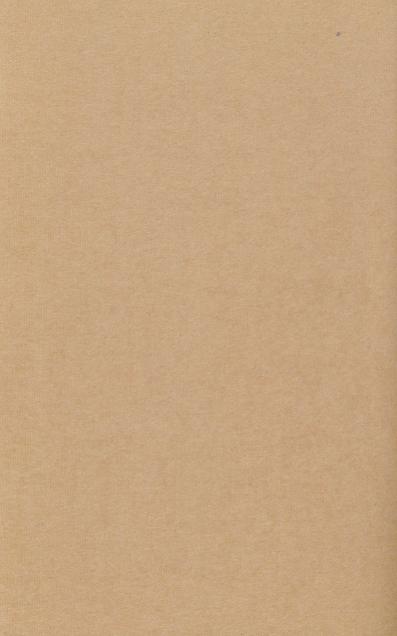








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